**From:** Richard Fetzer
**To:** Heston, Gerald; Chase, Kelley; Rupert, Richard
**CC:** Augustine, Kevin
**Sent:** 2/13/2013 10:51:16 AM
**Subject:** FW: VAPOR INTRUSION concerns at Dimock (Scranton Times Tribune article today)

An interesting perspective.

Richard M. Fetzer
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**From:** Mellow5n2@aol.com [mailto:Mellow5n2@aol.com]
**Sent:** Wednesday, February 13, 2013 9:43 AM
**To:** Richard Fetzer
**Subject:** Fwd: VAPOR INTRUSION concerns at Dimock (Scranton Times Tribune article today)

I was going to also include you on this email. Will also provide to some select PADEP people in the NERO. Feel free to circulate as you see fit. Hope you are doing well and also feel free to be critical of my comments. Note that many HCP and Marcellus letter reports of mine are also on scholarsphere.psu.edu at least till the point that someone complains!

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From: Mellow5n2@aol.com
To: werner.lora@epa.gov
Sent: 2/13/2013 9:31:50 A.M. Eastern Standard Time
Subj: Fwd: VAPOR INTRUSION concerns at Dimock (Scranton Times Tribune article today)

FYI

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From: Mellow5n2@aol.com
To: dvalvano@pahouse.net, bciccocioppo@AuditorGen.state.pa.us
Sent: 2/13/2013 9:30:47 A.M. Eastern Standard Time
Subj: VAPOR INTRUSION concerns at Dimock (Scranton Times Tribune article today)

I do wish to thank both of you for your time on concerns on the Marcellus drilling and unanswered questions at the Hazleton Creek Properties site. I have no desire to flood your offices with emails or letters but felt that this article in the Scranton Times Tribune on continued methane in Dimock provides support for one more very important monitoring concern that is typically done at PADEP sites.

http://thetimes-tribune.com/news/dep-opens-investigation-of-methane-in-dimock-water-well-1.1443921

During my past life as a geologist and project officer in the PADEP Northeast Regional Office (NERO) Hazardous Sites Cleanup Program (HSCP), geologist in the Waste Management Program, and over 20 years in the PADEP NERO Emergency Response Team have been involved with numerous gas migration investigations. The main objective of these investigations was to characterize the extent of the problem. This included determination of all contaminants (as well as the more obvious ones), define background concentrations and health based risk levels (human and environmental receptors) in environmental media (water, air, soil, etc.), and define the horizontal and vertical extent of the contamination plume.

Most of the above would seem obvious and logical but does not seem to be typical of the Dimock and possibly other Marcellus gas investigations. I admit that no longer being associated with PADEP it is possible that some techniques used may not be known to myself but talking to some of the residents in that area it seems that some common elements of typical PADEP investigations have not been done.

With regard to Dimock consider that the only monitoring that has been done has been with hand held instruments that is an important part for resident and worker safety but is totally inadequate in itself. Typical gas migration investigations that appear to be lacking at Oil and Gas sites include soil gas investigations. These are shallow borings by geoprobe (small portable pressure drilling rig) or slam bar) with samples collected for lab analysis in canisters over time (Summa or equivalent) or in special Tedlar

bags for immediate mobile lab (as the PADEP and USEPA have utilized in Pennsylvania for years, or GC/MS instruments in some regional offices). Soil gas samples is a common element of gas investigations normally called VAPOR INTRUSION investigations. Another important and missing element at Dimock is sub-slab samples which are small diameter borings thru basement floors to determine trapped migrating gases underneath building foundations. The last missing element at these Oil and Gas sites is ambient (outside air on each collection day) and basement/first floor 24-hour canister samples. This last element is REQUIRED to determine health risk values with established USEPA/CDC/PADEP risk concentrations.

The extent of VAPOR INTRUSION techniques is logically determined by the specific site and what elements described above (and others) by those PADEP, PA Department of Health, USEPA, and ATSDR/CDC personnel competent in these types of investigations. Certainly some techniques such as isotope analysis are valuable in VAPOR INTRUSION investigations but limited in their value when not utilized with the other described conventional techniques.

The concern in your inquiries should be why these common and widely used techniques are missing from Marcellus gas investigations? It is possible that this writer does not know all the facts, although when one cannot get a response from Harrisburg it would seem that the "nail is hit on the head" on these issues. Some examples that I have personally worked on is the Ivy Industrial Park not that far south of Dimock (with well over 150 houses sampled and possibly only one noted person complaining about the "common methane in groundwater" in their sample) that utilized all of these techniques, and included sewer and water line gas sampling by PADEP NERO staff. Other examples of logical and adequate VAPOR INTRUSION sampling included Tobyhanna Army Depot TCE/PCE areas, Valmont TCE Superfund site, Dunmore Carbon Monoxide and Carbon Dioxide Site, Foster Wheeler TCE and Certainteed sites, and various HSCP/Emergency Response sites over the years. I was also involved on one of the initial visits to the water valve pit that exploded in the Dimock area years ago to field monitor concentrations.

It would seem the lack of these common techniques of characterization coupled with limited protection to residents should be questioned at these sites. Some common vocal industry responses has been the "normal high methane" in this area of Pennsylvania. While it is true that some areas do have migrating gas to shallow geologic intervals and to the surface, it should be considered that the Indians kept the salt spring (Salt Springs State Park) a secret for a reason. This was due to the rarity of a source of salt (this water also had visible bubbles of methane that can be seen today) that was "not common" in this part of the state. As a licensed professional geologist that had worked for most of my 30 years in this region there has been few complaints of normal "background" methane in water. However, it would seem some Harrisburg bureaucrats and displaced Texans in the Marcellus area like to commonly talk about this "normal problem".

Over the years it seems that VAPOR INTRUSION investigation have evolved into a cost effective and feasible tool at Superfund, Emergency Response, HSCP, and even small fuel spill investigations. The larger investigations might even utilize expertise of various state and federal agencies to effectively solve these types of problems. Unfortunately it seems that the team approach has been mutilated by political expediency into more of the equivalent of a WWE match. These concerns are very significant and note that Dimock is technically a very small site compared to nearby Ivy Industrial Park but due to lack of response to concerns on characterization and public/ecological protection seems to be news even in foreign news.

I hope that like normal PADEP HSCP and Emergency Response investigations that regulators do what is necessary to define the problem then address remediation as feasible. Possibly more consideration of the highly experienced PADEP and federal staff would be a step in the correct direction. Over the years have worked with many experienced and dedicated experts in various (including the Oil and Gas) programs. Development of natural gas is important to the state but there is no reason that this cannot be done with adequate and normal environmental oversight as enforced at other industries. Again, thank you for your time and feel free to contact me at (570) 290-0347 or at this email.